

INTERDEPARTMENTAL COMMITTEE FOR METEOROLOGICAL
SERVICES AND SUPPORTING RESEARCH

Record of Actions 2004-1 Meeting
May 14, 2004

MEMBERS PRESENT

OFCM:	Mr. Samuel P. Williamson, Chairman
DOC:	Mr. John E. Jones, Jr., NWS
DOD/USN:	Mr. Robert Winokur for RADM Steven J. Tomaszeski, USN
DOD/USAF:	Col Craig Clayton for Brig Gen Thomas E. Stickford, USAF
DOE:	Mr. Rickey C. Petty
DHS/S&T:	Ms. Nancy Suski
DHS/USCG:	Dr. Jonathan M. Berkson
DOI:	Mr. Lewis T. Moore
DOT/FAA:	Mr. Richard Heuwinkel (Acting)
DOT/FHWA:	Ms. Regina McElroy
EPA:	Dr. S. T. Rao
NASA:	Dr. Ramesh Kakar
NRC:	Ms. Jocelyn Mitchell for Ms. Leta A. Brown
OMB:	Ms. Erin Wuchte
USDA:	Mr. Thomas Puterbaugh

Mr. James B. Harrison, Executive Secretary
Ms. Erin McNamara, Recorder

INVITED PARTICIPANTS

DOC:	Dr. James F. Kimpel, NOAA/OAR/NSSL
DOD:	Dr. Wayne Estabrooks, USN/CNO
	Col Mark Weadon, USAF/XOWP
	Mr. Michael R. Howland, USAF/AFWA
	Dr. Walter Bach, Jr., USA
DOT:	Mr. Paul A. Pisano, FHWA
DHS:	Mr. Craig Conklin, FEMA
NASA:	Mr. Jeff Halverson
OFCM:	Mr. Robert Dumont
	Lt Col Frank Estis, USAF
	Mr. Kenneth Barnett
	Mr. James McNitt, STC

Date of Issue: May 27, 2004

1. OPENING REMARKS

The meeting was called to order by the Chairman, Mr. Samuel P. Williamson. The meeting was held in the Truman Room of the White House Conference Center in Washington, D.C. The Chairman welcomed the ICMSSR members and invited participants. In particular he paid a special thanks to Ms. Erin Wuchte of the Office of Management and Budget (OMB) for attending this ICMSSR meeting. The Chairman noted that since the last ICMSSR meeting of April 30, 2003, the following new members have been named by their agencies to serve on the Interdepartmental Committee: RADM Steven J. Tomaszeski, Oceanographer of the Navy, representing the United States Navy (USN) [represented at this meeting by Mr. Robert Winokur of the Office of the Oceanographer of the Navy]; Brig Gen Thomas E. Stickford, Director of Weather, representing the United States Air Force (USAF) [represented at this meeting by Col Craig Clayton of Air Force Weather]; Ms. Nancy Suski, Director of Emergency Preparedness and Response Portfolio, representing the Department of Homeland Security (DHS) Science and Technology (S&T) Directorate; Ms. Regina McElroy, Director of the Office of Transportation Operations, representing the Department of Transportation (DOT) Federal Highway Administration (FHWA); and Mr. Richard Heuwinkel, Acting Staff Director of Aerospace Weather Policy and Standards, representing the Department of Transportation (DOT) Federal Aviation Administration (FAA) [at this time Mr. Heuwinkel is serving in an acting capacity on ICMSSR, since a replacement for Mr. David Whatley has not formally been named].

Mr. Williamson expressed appreciation to the speakers for the ICMSSR meeting. These include: Dr. James F. Kimpel, Director of the National Oceanic and Atmospheric Administration's (NOAA) National Severe Storms Laboratory (NSSL); Dr. Walter Bach, Jr., Program Manager of the Engineering Sciences Directorate of the Army Research Office (ARO), and Cochair of the Joint Action Group for Atmospheric Transport and Diffusion Modeling/Research and Development Plan [JAG/ATD(R&DP)]; Mr. Craig Conklin, Chief of the Nuclear and Chemical Hazards Branch of the DHS/Federal Emergency Management Agency (FEMA) Preparedness Division; Ms. Regina McElroy, Director of the Office of Transportation Operations in FHWA; Mr. Michael R. Howland, Technical Director and Chief Information Officer of the Air Force Weather Agency (AFWA), representing Col Charles Benson, Air Force Weather member of the Committee for Operational Processing Centers (COPC); Mr. Robert Dumont, Office of the Federal Coordinator for Meteorology (OFCM) Senior Staff Meteorologist; and Lt Col Frank Estis, USAF, Assistant Federal Coordinator for Air Force and Army Meteorological Affairs in OFCM.

Mr. Williamson emphasized the special importance of ICMSSR to the interagency meteorological community. He noted that ICMSSR activity arises out of actions from the Federal Committee for Meteorological Services and Supporting Research (FCMSSR) and, also, actions that come up from standing committees and working groups. Four areas in particular where ICMSSR makes substantial contributions to the interagency meteorological community are: requirements/operational deficiencies; issues/problems; plans, reports, handbooks, and standards; and crosscut reviews and analyses. In the

context of these four things, Mr. Williamson gave some examples of activities undertaken and accomplishments in these four areas. The Chairman also reviewed selected accomplishments since the last ICMSSR meeting and upcoming highlights, including: the 58th Interdepartmental Hurricane Conference (IHC) which was held in Charleston, South Carolina, March 1-5, 2004; the OFCM Information Dissemination Training Session held on April 6, 2004, in connection with the 26th National Hurricane Conference in Lake Buena Vista, Florida; the *2nd International Conference on Volcanic Ash and Aviation Safety* to be held at the Hilton Alexandria Mark Center Hotel in Alexandria, Virginia, from June 21-24, 2004; an *Urban Meteorology User Forum* to be held at the DoubleTree Hotel and Executive Meeting Center, Rockville, Maryland, September 21-23, 2004; the next ICMSSR meeting to be held this summer; and a FCMSSR meeting expected to be held in October 2004.

Mr. Williamson noted publications that were produced by OFCM since the last ICMSSR meeting. He provided the members copies of the *Urban Meteorology--Meeting Weather Needs in the Urban Community* (January 2004) document. The Chairman then noted the material provided for the meeting and reviewed the agenda.

ACTION: The agenda was approved.

2. PHASED ARRAY WEATHER RADAR PROJECT

This topic was introduced and background information given by Lt Col Frank Estis, USAF, Assistant Federal Coordinator for Air Force and Army Meteorological Affairs in OFCM. Lt Col Estis noted that the time is right for the Phased Array Weather Radar Project because the current Weather Surveillance Radar-1988 Doppler (WSR-88D), also known as the Next Generation Weather Radar (NEXRAD), will meet its planned life expectancy by 2014; a U.S. Navy-provided phased array radar (PAR) system has been placed at the NOAA National Severe Storms Laboratory (NSSL) in Norman, Oklahoma; and multi-purpose phased array radars are feasible. Lt Col Estis also noted that OFCM activity in this area is the result of action items resulting from the last meetings of the Federal and Interdepartmental Committees for Meteorological Services and Supporting Research. In response to a FCMSSR action, OFCM arranged for a Phased Array Weather Radar briefing for the ICMSSR in April 2003, to begin coordination and action. Then, in response to an ICMSSR action from its April 2003 meeting, (1) OFCM hosted a Phased Array Weather Radar Project meeting on July 22, 2003, attended by six Federal departments and agencies to explore expanded agency participation in the project, and (2) OFCM arranged for a January 29, 2004, visit to NSSL by representatives from three Federal agencies to learn more about PAR technology and how it might benefit their organizations.

Dr. James F. Kimpel, Director of NOAA's National Severe Storms Laboratory (NSSL) in Norman, Oklahoma, then provided more specific information on the research and development status of the Phased Array Weather Radar Project. Dr. Kimpel began by noting four major events since ICMSSR's last meeting of April 30, 2003. These include a socioeconomic study on NEXRAD, building of a phased array weather radar, National

Science Foundation (NSF) funding of an Engineering Research Center for Collaborative Adaptive Sensing of the Atmosphere (CASA), and completion of a Congressionally-mandated engineering study. Dr. Kimpel highlighted NEXRAD's impact on performance measures and showed that probability of detection and lead times significantly improved after the introduction of NEXRAD; however, false alarm rates remained steady throughout that period. The socioeconomic study (prepared by Sutter and Simmons, 2004) shows that NEXRAD deployment reduced expected tornado fatalities by 45 percent and expected tornado injuries by 40 percent, and that, using Environmental Protection Agency (EPA) methods, this translates to a \$378 million benefit per year (8 years, FY 2003 dollars, deaths avoided only). Dr. Kimpel identified PAR milestones to include: Navy accepts PAR from Lockheed Martin (October 2003); NSSL assigned to keep PAR "in good working order" as per NOAA/FAA/Navy Memorandum of Understanding (October 2003); test and evaluation period underway (October 2003 - present); NOAA funding for PAR (\$1 million) in place (February 2004); working problems with velocity channel and digital signal processor (2004); substantial progress made with FAA funding (2004); and PAR now ready to collect data and perform intercomparison studies (May 2004 and on). Dr. Kimpel showed a recent PAR data example of reflectivity and velocity. He also noted that there is a need for low-level observations, and that the Earth's curvature effects prevent 72 percent of the atmosphere below 1 km from being observed by NEXRAD.

Dr. Kimpel informed ICMSSR that the CASA is a 10-year, \$100 million effort involving academic partners University of Massachusetts Amherst, University of Oklahoma, Colorado State University, and University of Puerto Rico Mayaguez. NOAA is a formal partner of CASA. CASA seeks to revolutionize the way we observe, detect, and predict atmospheric phenomena by creating distributed collaborative adaptive sensor networks that sample the atmosphere where and when end-users' needs are greatest. Its concept involves inexpensive, phased array Doppler radars on cell towers and buildings focusing on the lowest 3 km of the atmosphere. There will be adaptive dynamic sensing of multiple targets, including aircraft, and will be complementary to NEXRAD and PAR. Its paradigm is of Distributed Collaborative Adaptive Sensing (DCAS) systems which sample the atmosphere where and when end-users' needs are greatest.

Dr. Kimpel also informed ICMSSR of some of the details of the Congressionally-mandated engineering study which was produced by the Aerospace Corporation. He noted that the Aerospace, Inc. study indicates that phased array transmit/receive (T/R) elements will enjoy significant cost reductions over present prices. Companies interviewed in the Aerospace study pegged 2010 costs for active, T/R elements to be in the \$35-250 range. The SPY-1 antenna, containing approximately 5,000 individual passive elements at \$1,500-2,000 each, cost approximately \$10 million. Thus it will be possible to manufacture a phased array antenna for weather surveillance for less than \$1 million. This antenna includes the transmitter and primary receiver. Dr. Kimpel noted that, given this price breakthrough, it is now possible to envision a four-faced radar system (four antennae mounted as in a pyramid) that would yield a weather radar with no moving parts. This would greatly reduce lifecycle cost and yield a volume scanning rate of approximately 20 seconds. The current NEXRAD volume scanning rates are between

5 and 6 minutes.

Dr. Kimpel's summary and vision states that: (1) PAR technology will become cheap; (2) Multi-purpose radars are feasible for weather surveillance; radar data assimilation into very high resolution, very short term, ensemble-based forecast models; aircraft tracking; non-cooperative aircraft tracking; 4D measurements for dispersion winds; and chemical/biological detection; (3) Polarization diversity, multi-frequency, active PAR T/R elements already exist; and (4) the question whether government agencies can collaborate on a multi-purpose project of this magnitude.

ACTION ITEM 2004-1.1: Phased Array Radar and Adaptive Radar Sensing Strategy.

Part A: OFCM work with the Federal agencies to form a Joint Action Group for Phased Array Weather Radar Project (JAG/PAWRP) of stakeholder agencies. (Suspense date: July 30, 2004)

Part B: JAG/PAWRP identify and document the potential needs and benefits of the agencies that phased array radar and an adaptive radar sensing strategy would address. (Suspense date: November 30, 2004)

Part C: JAG/PAWRP integrate those identified needs into a multiagency coordinated R&D plan that would focus R&D efforts on meeting agency needs. (Suspense date: February 1, 2005)

3. COMMITTEE FOR OPERATIONAL PROCESSING CENTERS (COPC) ACTIVITIES

Mr. Michael R. Howland, Technical Director and Chief Information Officer of the Air Force Weather Agency (AFWA), representing Col Charles Benson, Air Force Weather COPC member, briefed ICMSSR on this agenda item. Mr. Howland noted that AFWA hosted the COPC meeting held March 31 - April 1, 2004, at Offutt Air Force Base, Nebraska. On April 1, 2004, the Directors of the Operational Processing Centers [NOAA's National Centers for Environmental Prediction (NCEP), AFWA, and Navy's Fleet Numerical Meteorology and Oceanography Center (FNMOC)] signed a National Concept of Operations Framework to guide the implementation of the Weather Research and Forecasting (WRF) community model--the next-generation mesoscale numerical weather prediction model. Mr. Howland began his discussion of WRF by showing some examples of next generation improvements for mesoscale forecasting made possible by the new community model. He noted that the National Concept of Operations Framework addresses five major topical areas for cooperative effort by the OPC's. These include operations, common infrastructure, business strategy, research and technology transition, and performance measurement. The WRF Executive Oversight Board oversees WRF planning and budgeting, and COPC coordinates WRF operational issues. Regarding operations, NCEP's primary focus is North America for DOD and non-DOD customers, and will run unclassified WRF windows for the NORTHCOM region, including Alaska, Puerto Rico, Hawaii, and hurricanes. AFWA and FNMOC window

priorities will be driven by the needs of the Unified Commanders. They will run WRF windows for non-NORTHCOM regions, cooperate to minimize overlap while maximizing coverage, and rely on WRF data and products from each other. Upon both OPC's completing full migration to the WRF framework, assignment of domains will be based on lead command and availability of processing capability to satisfy joint force needs. WRF window resolutions will be driven by user needs and meteorological considerations, and will allow science to resolve features as small as 5-10 km (improved accuracy and resolution for input to ATD models). WRF windows will be run at 00, 06, 12, and 18 UTC. Regarding catastrophic backup/emergencies, the OPC's will maintain a contingency capacity for sister center WRF backup (continuity of operations), catastrophic backup will be initiated based on operational priorities, and the global model will be used as backup if insufficient capacity is available to run all of a failed center's windows.

The key to WRF interoperability is integration of a compliant hardware baseline, establishment of standard WRF software lifecycle processes, and use of standard data exchange formats. Mr. Howland stated that WRF hardware and software infrastructures must comply with the Federal Enterprise Technical Reference Model (FETRM) under development by OMB. OPC's will support three levels of WRF interoperability; there will be a common WRF framework for model output field exchange, physics package insertion, and dynamic cores. The business strategy will leverage common contracts for acquisition/maintenance; establish a process for management of baseline components; and exploit training partnerships for numerical weather prediction (NWP) developers, users, maintainers, and researchers. Research and technology transition will be such that the R&D community will follow software standards to allow rapid infusion of new science at minimum cost. Performance measurement will track operationally significant elements and use operationally significant performance shortfalls to drive R&D priorities.

In his discussion of the WRF National CONOPS Framework transition status, Mr. Howland noted that subsequent to the April 1, 2004, signing of the WRF National CONOPS Framework document by the NCEP, FNMOC, and AFWA Directors, the next step is for the Joint Action Group for Operational Community Modeling (JAG/OCM) to present a WRF Implementation Plan for COPC approval at its October 2004 meeting. The Implementation Plan will include operational testing and transition activities, standards for WRF data exchange and model operation, and a formal backup execution plan. Mr. Howland then noted that WRF transition was on schedule at NCEP and AFWA. He also noted that the Naval Research Laboratory (NRL) has redirected significant in-house resources to WRF and that NRL will convert the Coupled Ocean-Atmosphere Mesoscale Prediction System (COAMPS) dynamical core into the WRF coding standard and infrastructure. A plan is under development for NRL to function as a WRF Development Test Center (DTC). The plan includes a request for additional in-house computational resources.

Mr. Howland then informed ICMSSR of initiatives of the COPC Working Group for Cooperative Support and Backup (WG/CSAB) and the High Performance Computing/Information Technology (HPC/IT) Working Group (WG). He noted that

WG/CSAB established the JAG/OCM to plan and oversee implementation of the WRF National CONOPS Framework; and that the WG/CSAB is examining integration and synergy between the COPC OPC's, the Shared Processing Program, and the Joint Center for Satellite Data Assimilation (JCSDA). Mr. Howland also referred to an update of the *Federal Plan for Cooperative Support and Backup Among Operational Processing Centers*; preparation of a *Catastrophic Backup Action Plan* (CBAP) to identify catastrophic backup shortfalls that exist at the Nation's military and civilian meteorological, oceanographic, and satellite OPC's that can be addressed in the short term; and an update to an OPC "Gap Analysis." Regarding the HPC/IT WG, Mr. Howland noted that the working group was formed at the November 2003 COPC meeting, and that it presented possible HPC/IT collaboration focus areas at the April 2004 COPC meeting. COPC has directed the HPC/IT WG to focus on the priorities of data exchange, mutual backup, and operational test centers, including grid computing, communications, and data formats. HPC/IT WG will conduct monthly meetings to refine the focus areas, and provide a report on recommendations with associated issues and costs at the fall 2004 COPC meeting.

ACTION: Information.

4. HOMELAND SECURITY ACTIVITIES

Portions of this presentation were given by Mr. Robert Dumont, OFCM Senior Staff Meteorologist; Dr. Walter Bach, Jr., Program Manager of the Engineering Sciences Directorate of the Army Research Office, and Cochair of the Joint Action Group for Atmospheric Transport and Diffusion Modeling/Research and Development Plan [JAG/ATD(R&DP)]; and Mr. Craig Conklin, Chief of the Nuclear and Chemical Hazards Branch of the DHS/Federal Emergency Management Agency Preparedness Division. Mr. Dumont began by presenting a chronology of pertinent activities. He noted that after September 11, 2001, the Working Group for Environmental Support to Homeland Security (WG/ESHS) was established, and following that its Joint Action Group for Selection and Evaluation of Atmospheric Transport and Diffusion Models (JAG/SEATD). JAG/SEATD produced a widely used report on Federal ATD modeling capabilities in August 2002 entitled *Atmospheric Modeling of Releases from Weapons of Mass Destruction: Response by Federal Agencies in Support of Homeland Security*. The TOP OFFICIALS 2 (TOPOFF 2) exercise occurred in May 2003. During TOPOFF 2, conflicting plume forecasts made ATD modeling and products a Department of Homeland Security (DHS) issue, and the concept of operations development for environmental preparedness support to homeland security was moved to the Radiological Dispersal Devices (RDD) and Improvised Nuclear Device (IND) Working Group, Consequence Management Subgroup (CMS) (Plume Modeling Subset). Mr. Dumont also noted the June 2003 OFCM-sponsored special session at the annual George Mason University (GMU) Transport and Dispersion Modeling Conference which was the first step in addressing the recommendations from the JAG/SEATD Report and provided an opportunity to get feedback from the academic and private sectors. A major conclusion from the session was the need to move forward on an R&D plan. In October 2003, the JAG/ATD(R&DP) was formed with Cochairs Dr. Walter Bach of DOD/Army and Ms.

Nancy Suski of DHS/S&T. Finally in April 2004, after almost a year of interagency coordination, the CMS Subgroup recommendation to form an Interagency Modeling and Atmospheric Assessment Center (IMAAC) was approved in concept by the Homeland Security Council Deputies Committee.

Dr. Walter Bach discussed preparation of the *Federal Atmospheric Transport and Diffusion Research and Development Plan* [the plan follows from an action from the Federal Committee for Meteorological Services and Supporting Research (FCMSSR) meeting of October 18, 2002], an integrated R&D plan to support the atmospheric transport and diffusion modeling needs and activities of the Federal agencies in support of DHS and individual agency requirements. Dr. Bach discussed JAG/ATD(R&DP) membership and showed it to include representatives from DOC/NOAA (Air Resources Laboratory, National Weather Service, National Ocean Service), DOD (Army, Defense Threat Reduction Agency, Air Force), DOE, DHS (Emergency Preparedness and Response, Science and Technology), NASA, NRC, and EPA. He also reviewed the essentials of the group's Terms of Reference. Dr. Bach noted that the scope of effort for the JAG/ATD(R&DP) included: identifying the R&D requirements for Federal ATD modeling with particular emphasis on Homeland Security needs; placing emphasis on meteorological inputs and data refinements required to improve hazard predictions resulting from atmospheric releases; considering directly measured dispersion inputs and transport and diffusion calculations research needs; and documenting research needs and requirements in an R&D plan and submitting it to the Federal Committee through ICMSSR. Dr. Bach stated that the process for identifying needs and priorities included a thorough review of the existing body of literature, and that user requirements and current scientific capabilities were the primary driver for identifying and prioritizing R&D needs. Key observations included: need to quantify uncertainty in model inputs and predictions; need robust reach-back capability to support responder community during incidents of national significance; need to close the knowledge gap between the mesoscale and microscale modeling capabilities; importance of field experiments and sustained analysis of data to understand ATD, especially in urban environments; acceptance of local-scale data into ATD models is a challenge; transport and diffusion in complex flows; role of regional meteorological monitoring networks must be examined; and diverse capabilities argues for diversity in models. Dr. Bach noted that the first draft of the *Federal Atmospheric Transport and Diffusion Research and Development Plan* is nearly complete. Next steps include informal peer review in June 2004, vetting the plan at the 8th Annual George Mason University Transport and Dispersion Modeling Conference in July 2004, presentation of final recommendations at the next ICMSSR meeting, publishing the plan, and including the plan in the Urban Meteorology User Forum in September 2004.

Mr. Craig Conklin led discussion of the Interagency Modeling and Assessment Center (IMAAC). He stated that the issue being dealt with was "How to effectively organize and coordinate Federal assets to provide DHS and other Federal, State, and local emergency response decision-makers with a single point of contact for atmospheric modeling predictions and assessments during an Incident of National Significance." Mr. Conklin noted that multiple Federal models exist for agency-specific applications;

however, the models lack consistency in their ability to communicate hazards. The Office of Science and Technology Policy (OSTP) in the Executive Office of the President was tasked to develop recommendations concerning this problem, and the Consequence Management Subgroup of the RDD/IND Preparedness Workgroup develop a proposal under OSTP guidance. The recommendations proposed formation of an Interagency Modeling and Atmospheric Assessment Center (IMAAC) which would serve as a single source of hazard predictions for Incidents of National Significance. Federal coordination would be accomplished through OFCM, and the primary base for the IMAAC would be collocated with DOE's Atmospheric Release Advisory Capability at Lawrence Livermore National Laboratory in Livermore, California. Key elements of the IMAAC include: DHS leadership, interagency coordination/consultation, integration into the existing response system, scientific integrity and excellence, and cost effectiveness. On April 15, 2004, the concept of the IMAAC was approved by the Homeland Security Council Deputies Committee. It was determined that DHS will establish an IMAAC; until then, DOE's National Atmospheric Release Advisory Center will serve as the primary atmospheric hazard predictor. Follow-up actions include obtaining NOAA concurrence on the primary base for IMAAC operations, obtaining a DOD response for continuity of operations support, developing a detailed IMAAC implementation plan, drafting a Memorandum of Understanding on this subject, and transferring this effort to the DHS Science and Technology Directorate. It is believed that activities are on the right path to solve this issue concerning an interagency mechanism for atmospheric hazard predictions.

ACTION: Information. [Secretary's Note. This is preparatory for the next meeting of ICMSSR at which the Committee is expected to take action on the disposition of the recommendations and conclusions resulting from JAG/ATD(R&DP).]

5. WEATHER INFORMATION FOR SURFACE TRANSPORTATION

Ms. Regina McElroy, Director of the Office of Transportation Operations, Federal Highway Administration, began this item which covers a new and important area of meteorological support. The essentials of Ms. McElroy's presentation on the FHWA Road Weather Management Program included information on the impacts of weather on highways, highlights of the FHWA Road Weather Management Program, and what should be done to continue to advance this program. Ms. McElroy emphasized the safety, mobility, and productivity aspects of impacts of weather on highways. She used a very recent example (just two weeks prior to this ICMSSR meeting) of road flooding in which five people drowned in North Texas as a result of major rain squalls that swept across the state. In this case all five of the victims were in cars (in fact, more than 50 percent of all flood-related drownings do occur in vehicles). Ms. McElroy made clear that the solution to this problem is not better forecasts, watches and warnings alone but, rather, a combination of better weather and better road condition information.

Ms. McElroy identified the FHWA Road Weather Management Program goal to be "Anytime Anywhere Road Weather Information for all Road Users." She noted that the

outcome which is sought is safe and efficient transportation regardless of the weather, and that this outcome is shared by FHWA and NOAA. The Program strategies include: developing new tools and technologies; performing outreach and customer service; and building partnerships. Ms. McElroy then highlighted important efforts shaping road weather. She indicated that the National Interstate Highway System was completed during the 1950 to 1980 period. Ms. McElroy identified many important efforts since 1975, most of them occurring in the last ten years. These included Weather Information for Surface Transportation (WIST) symposia, cosponsored by OFCM and FHWA, in 1999 and 2000, and the *Weather Information for Surface Transportation--National Needs Assessment Report* (WIST Report) which was published in December 2002. Other efforts which were highlighted by Ms. McElroy include the FHWA Maintenance Decision Support System (MDSS) which uses advanced weather forecasts, includes advanced road condition prediction, incorporates road treatment rules of practice, and generates route-specific treatment recommendations; the National Research Council 2004 report *Where the Weather Meets the Road--A Research Agenda for Improving Road Weather Services* which is a key report to guide the FHWA program and includes five major recommendations on integrated observing, coordinated research, improved modeling, information dissemination, and "infostructure;" and a new Intelligent Transportation Systems (ITS) initiative called the Nationwide Surface Transportation Weather Observing System with the goal to design, test and evaluate a data portal that integrates State Department of Transportation road weather information systems (RWIS) data, and enables the creation of route-specific forecasts and other road weather products.

Ms. McElroy then noted that to keep the program going and growing we need to continue to build partnerships, including the NOAA/FHWA Partnering Plan, state partnerships, private sector partnerships, and multi-modal partnerships. Ms. McElroy also noted that NOAA and FHWA support the formation of a WIST Working Group and will prepare a NOAA/FHWA Memorandum of Understanding which will cover WIST areas.

Lt Col Frank Estis of OFCM then led discussion of WIST next steps. He noted that OFCM has facilitated several NOAA-FHWA meetings to begin joint planning. These include: an August 18, 2003, meeting between the FHWA and NOAA Administrators; and senior staff level NOAA-FHWA meetings to discuss overall strategy and plans for near-, intermediate-, and long-term NOAA-FHWA activities for WIST. Additionally, NOAA and FHWA staff personnel met, and continue to meet to work on a NOAA/FHWA Partnering Plan. The first iteration of the Partnering Plan groups initiatives into five categories: Training, Observations, Numerical Weather Prediction, Databases/Decision Support, and Information Dissemination. Lt Col Estis stated that other agencies have stated WIST needs and these should be addressed as part of an overall WIST effort; we need to leverage efforts to increase the return on R&D investments; and an integrated strategy is a win-win approach for all stakeholders.

Lt Col Estis pointed out that the suggested next steps from the WIST Report correlate well with recommendations from a November 2003 American Meteorological Society Policy Forum and the National Research Council 2004 report *Where the Weather Meets*

the Road--A Research Agenda for Improving Road Weather Services. This is indicative of an emerging national consensus on a set of WIST next steps. The main areas of emerging consensus are: Federal partners should charter an “appropriate entity” to detail unmet needs and recommend a course of action; Establish a WIST R&D Program with a substantial level of fundamental research; and Federal partners should develop a unified strategy to capitalize on the potential of fundamental research topics. Suggested WIST next steps became the below action items.

ACTION ITEM 2004-1.2: NOAA/FHWA Partnering Plan for WIST. Complete development of the NOAA/FHWA Partnering Plan, covering road weather needs, as a first step in showing progress on WIST needs. (Suspense date: July 16, 2004)

ACTION ITEM 2004-1.3: Working Group for WIST.

Part A: OFCM establish a Working Group for WIST (WG/WIST), led by FHWA and NOAA, to allow all Federal departments and agencies to participate in the development of plans or projects to meet their WIST needs and ensure Federal resources are used efficiently. (Suspense date: July 15, 2004)

Part B: WG/WIST develop a multiyear, Federal WIST research program plan to bring together the Federal weather and surface transportation research communities and provide a vision for the public and private sectors to use for planning purposes. (Suspense date: December 15, 2004)

Part C: WG/WIST develop an overarching, Federal, multiagency-coordinated WIST implementation program. (Suspense date: May 31, 2005)

6. NEXT MEETING

The Executive Secretary will schedule the next ICMSSR meeting in coordination with the ICMSSR Chairman and members.

The meeting adjourned at 4:00 p.m.